

## SECTION 1501

## SEWER REHABILITATION

## 1501-1 GENERAL

**1501-1.1 Description.** - This work shall consist of rehabilitation of sewers by a lining process as shown the plans, as specified in those specifications and the special provisions, and as directed by the Engineer.

Rehabilitation of sewers shall conform to the requirements of Section 500-1, "Pipeline Rehabilitation" of the APWA Standard Specifications and these City Standard Specifications.

The type or types of materials and methods for the project shall be as designated on the plans.

**1501-2 MATERIALS.** - The City will require testing of the materials for compliance with these specifications prior to delivery to the project. Materials shall not be more than six months old from the date of manufacture to the time of installation.

**1501-3 MISCELLANEOUS REQUIREMENTS.** - If the Contractor uses any material or method other than that approved by the Engineer, the Contractor shall, at no cost to the City, remove the rehabilitated pipe, and replace it with a new pipe. The material of the new pipe shall be as approved by the Engineer.

**1501-3.1 Odor and Noise Mitigation.** - When working inside manholes and sewer lines, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of hydrogen sulfide.

To minimize the dispersal of sewer odors above ground the Contractor shall:

- 1) Seal all open sanitary manholes or access openings in the lines when his operations have been suspended for a period of two hours or more.
- 2) During construction operations when open manholes or access openings can not be sealed, the Contractor shall vent and filter hydrogen sulfide gases upstream of the openings in the line.

The hydrogen sulfide gas level shall not exceed 5 ppm (by volume) at the outside wall of any habitable structure or at any point within 25 feet of the sewer opening.

The noise level from the Contractor's operation shall not exceed 86 dbA at the outside wall of any habitable structure or at any point within 50 feet of the noise source.

Within 30 days after execution of the contract the Contractor shall submit odor and noise mitigation plans for the approval by the Engineer.

**1501-3.2 Plugging and Diversion of Sewage Flow.** - The work may require the temporary plugging of the sewer upstream of the construction area and diversion of sewage flows. The Contractor shall submit a diversion plan, at least

one week in advance, to the Engineer and provide all material, labor, and equipment to plug lines, and divert and pump sewage flows. The Contractor shall be responsible for any damages that may result from the blockage of sewage.

Flow charts are available for viewing at the Public Works Department in the San Jose City Hall. The charts are only meant to represent flow at the time that the measurements were taken.

If the Engineer determines that the Contractor's diversion plan is inadequate, the Contractor shall provide equipment, materials, and labor, to develop a viable diversion and pumping plan.

Prior to plugging any lines, the contractor shall notify the Sewer Engineering Section of the Streets and Traffic Department, at least 24 hours in advance at (408) 277-4373.

Included in this item of work is pumping of local depressions in the pipe that may or may not be shown on the plans.

**1501-3.3 Sewer Lateral Verification.** - The Contractor shall dye test all laterals to verify active laterals, if required by the Engineer or the plans, and shall be responsible for connecting only those laterals that are actively in service.

**1501-3.4 Existing Sewer Service Lateral Connections.** - The Contractor shall be responsible for the reconnection of existing laterals to the new liner according to the recommendations of the liner manufacturer and these City Standard Specifications.

**1501-4 CLEANING OF PIPELINES.** - All sewer lines to be relined shall be cleaned prior to video inspection or rehabilitation of the existing line.

Video tapes provided by the City are only intended for the observation of the structural condition of the pipe at the time of the taping. The tapes do not indicate to what extent cleaning is required. It is the responsibility of the Contractor to investigate, before bidding, the amount of cleaning required to perform the insertion of the liner.

Cleaning shall be accomplished using standard mechanically-powered or hydraulically-propelled cleaning tools. Selection of the equipment to be used shall be based on the condition of the lines at the time the work commences and shall be as approved by the Engineer.

The pipelines shall be cleaned by removing all sludge, dirt, sand, grease, rocks, roots, and other material and obstructions from the sewer lines and manholes that would prevent proper installation of the pipe liner. All necessary precautions shall be taken to protect the sewer lines from damage due to the use of cleaning equipment. Whenever hydraulically-propelled cleaning tools (those dependent upon water pressure to provide cleaning force, or any tools which require the flow of water in the sewer line) are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property being serviced by the manhole sections involved.

All sludge and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the upstream or downstream manhole of the section being cleaned. Material shall not be allowed to pass from one section to another. When hydraulic cleaning equipment is used, a suitable weir or dam shall be constructed in the downstream manhole to trap all solid material.

All materials resulting from pipeline cleaning operations shall be removed and conveyed by the Contractor to a waste disposal site. The Contractor shall

locate and select a suitable waste disposal site and pay all disposal fees involved. Under no circumstances shall materials removed from sewer lines be dumped or spilled onto the streets or into ditches, catch basins or storm drains or downstream sanitary sewer lines.

Vehicles used to convey the waste materials to the disposal sites shall be tightly covered.

**1501-5 TELEVISION INSPECTION.** - Refer to Section 1307-3, "Television Inspection" of these Specifications.

### **1501-6 POINT REPAIRS**

**1501-6.1 General.** - The point repair contract item covers work required to prepare defective sections of existing sewer lines for rehabilitation that requires excavation. Generally, the work will include repair of joints or replacement of pipe. Flow control of affected reaches of sewer shall be performed as specified herein.

Point repair locations indicated on video tapes, provided by the City or Contractor, or indicated on the plans can not always exactly be determined before the pipe is exposed. The location shown on the plans shall be considered accurate if within five feet of the actual location. All work to expose and correct the defect, materials, and equipment shall conform to applicable provisions of this Section.

All point repairs shall be visually inspected by the Engineer prior to backfilling.

The repair method for severe offset joints, sags, obstructions, and broken pipe is as described below:

- 1) For offset joints and sags, the Contractor may realign the existing pipe. Voids created by realignment shall be backfilled to prevent further movement of the pipe.
- 2) For obstructions, broken pipe, and sags and obstructions that can not be realigned the Contractor shall remove the necessary length of pipe by cutting perpendicular to the pipe axis to leave a plain end. The section shall be replaced with the same pipe material and diameter as the existing pipe. The new section shall be banded to the existing section and concrete poured around the band.

**1501-6.2 Materials.** - Unless otherwise indicated by the plans or the Engineer, the pipe and materials shall be the same as that of the existing line and shall conform to the requirements of Section 1207, "Pipe and Structures" of these City Standard Specifications for type and class.

**1501-6.3 Earthwork.** - All trenching and backfill shall be performed as specified in Section 1301, "Trench Excavation, Bedding and Backfill" of these City Standard Specifications."

**1501-6.4 Sewage Diversion and Dewatering.** - When required by the plans, the Contractor shall divert sewage flows around the work and dewater the excavation. This work shall be performed as specified in this section and Section 1302, "Pipe Installation" of these City Standard Specifications.

**1501-6.5 Notification.** - The Contractor shall notify the Engineer at least 24 hours prior to performing the work and obtain approval of the work to be performed.

**1501-7 MEASUREMENT.** - The work performed under this section will be listed in the contract item by pipe size and type, and type of liner or whatever information is necessary for identification.

The length of pipe rehabilitation to be paid for will be the horizontal length measured in feet from terminus to terminus as shown on the plans with the length in feet of intervening structures deleted.

Verification of sewer lateral and reconnection of sewer lateral will be measured as units determined from actual count in place.

**1501-8 PAYMENT.** - The lengths of rehabilitated pipe, measured as specified in Section 1501-7, "Measurement" will be paid for at the contract price per linear foot for the sizes of pipes and types of liner installed.

The pay quantity for verification of sewer lateral and reconnection of sewer lateral, measured as specified in Section 1501-7, "Measurement," will be paid for at the appropriate contract unit price for the number of laterals verified and reconnected.

Pumping and diversion of sewage, and odor and noise mitigation each will be paid for at the appropriate contract lump sum price.

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in pumping and diversion of sewage, cleaning, TV inspection before and after lining, furnishing and installing liner, point repairs, verification and reconnection of laterals, odor and noise mitigation, all complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.